In the Claims:

Please amend claims 1, 4, and 6, as follows:

1. (Currently Amended) A method of detecting vapor recovery system failures associated with a fuel dispensing point, comprising:

a) determining an amount of fuel dispensed at each of ~~the~~ a plurality of dispensing points at multiple times;

b) determining a composite amount of vapor recovered for said ~~flow rate for the~~ plurality of dispensing points at multiple times; and

~~c) calculating a vapor flow to dispensed fuel ratio for each of the plurality of dispensing points based on the amounts of fuel dispensed at each of the plurality of dispensing points and the composite vapor flow rates for the plurality of dispensing points;~~

c) calculating a vapor recovered to fuel dispensed ratio for each of said plurality of fuel dispensing points by:

(1) forming a generalized equation for the relationship between said vapor recovered, said fuel dispensed, and a vapor recovered to fuel dispensed ratio, for each of the plurality of fuel dispensing points; and

(2) solving said generalized equation for each of said vapor recovered to fuel dispensed ratios for each of the plurality of fuel dispensing points.

2. (Currently Amended) The method of claim 1 further comprising ~~the steps of:~~

~~e) repeating the steps (a), (b), and (c) to determine each of a plurality of vapor flow to dispensed fuel ratios for each of the plurality of dispensing points; and~~

~~f) determining whether the plurality of vapor flow to dispensed fuel ratios for each of the plurality of fuel dispensing points are consistently low, thereby detecting vapor recovery system failures~~ determining if said vapor recovered to fuel dispensed ratios for each of said plurality of dispensing points is within an acceptable range.

3. (Currently Amended) The method of claim 1 ~~wherein the calculating step comprises:~~

~~forming a generalized equation for the relationship between vapor flow, fuel flow, and the vapor flow to dispensed fuel ratio, for each of the plurality of fuel dispensing points; and~~

~~solving each of the generalized equations for the vapor flow to dispensed fuel ratio for each of the plurality of fuel dispensing points.~~

further comprising determining whether said vapor recovered to fuel dispensed ratios for each of said plurality of fuel dispensing points are consistently low, thereby detecting vapor recovery system failures.

4. (Currently Amended) The method of claim ~~3~~ 1 wherein ~~the~~ said generalized equation is in the form of $R = (L^T L)^{-1} L^T A$, wherein L is a two-dimensional matrix comprising ~~the amounts of~~ said fuel dispensed at each of the plurality of fuel dispensing points in one dimension and busy periods in the other dimension, L^T is the transpose of L, A is a vector of ~~the composite~~ said vapor recovered ~~flow rates~~ for each of said busy periods, and R is a vector of the ~~said~~ vapor recovered ~~flow~~ to ~~dispensed fuel~~ fuel dispensed ratios at each of the plurality of fuel dispensing points.

5. (Original) The method of claim 1 wherein the steps (a) and (b) are performed during a plurality of busy periods.

6. (Currently Amended) ~~The~~ A method of ~~claim 1~~ detecting vapor recovery system failures associated with a fuel dispensing point, comprising:

a) determining an amount of fuel dispensed at each of ~~the~~ a plurality of dispensing points at multiple times;

b) determining a composite amount of vapor recovered for said plurality of dispensing points at multiple times;

c) calculating a vapor recovered to fuel dispensed ratio for each of said plurality of dispensing points based on said fuel dispensed at each of said plurality of dispensing points and said vapor recovered for said plurality of dispensing points; and

d) determining if said vapor recovered to fuel dispensed ratio for each of said plurality of dispensing points is within an acceptable range;

wherein ~~the~~ said plurality of fuel dispensing points form a group of fuel dispensing points sharing a common vapor flow sensor, the method further comprising the step of determining a leaking dispensing point by determining which of ~~the~~ said vapor recovered ~~flow~~ to ~~dispensed fuel~~ fuel dispensed ratios does not lower in value.

Please cancel claims 7-30, without prejudice.

7. (Cancelled) A method of detecting a true vapor recovery failure in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the method comprising the steps of:

calculating a plurality of vapor flow to dispensed fuel ratios for each of a plurality of fuel dispensing points;

determining an observed number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determining an expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points; and

determining whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on a calculation that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points.

8. (Cancelled) The method of claim 7 wherein the determining whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure step comprises producing a chi-squared statistic based on the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points and comparing the chi-squared statistic to a critical value.

9. (Cancelled) The method of claim 7 further comprising the steps of:

determining an observed number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points; and

determining an expected number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points;

wherein the determining whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure step is based on a calculation that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points and the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points.

10. (Cancelled) The method of claim 9 wherein the determining whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure step comprises producing a chi-squared statistic based on the observed numbers and the expected numbers for each of the fuel dispensing points and comparing the chi-squared statistic to a critical value.

11. (Cancelled) The method of claim 7 further comprising the steps of:

determining a proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determining an overall proportion of vapor flow to dispensed fuel ratios indicating a failure; and

comparing the proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the plurality of dispensing points to the overall proportion of vapor flow to dispensed fuel ratios indicating a failure, thereby determining which of the plurality of fuel dispensing points have experienced true vapor recovery failures.

12. (Cancelled) The method of claim 11 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure

is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure.

13. (Cancelled) The method of claim 11 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 1% significance level.

14. (Cancelled) The method of claim 11 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 5% significance level.

15. (Cancelled) A method of detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the method comprising the steps of:

calculating a plurality of vapor flow to dispensed fuel ratios for each of a plurality of fuel dispensing points;

determining a proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determining an overall proportion of vapor flow to dispensed fuel ratios indicating a failure; and

comparing the proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the plurality of dispensing points to the overall proportion of vapor flow to dispensed fuel ratios indicating a failure, thereby determining which of the plurality of fuel dispensing points have experienced true vapor recovery failures.

16. (Cancelled) The method of claim 15 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure

is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure.

17. (Cancelled) The method of claim 15 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 1% significance level.

18. (Cancelled) The method of claim 15 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 5% significance level.

19. (Cancelled) A system for detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the system comprising:

a plurality of fuel dispensing points coupled to a main fuel storage system by fluid carrying conduit and vapor carrying conduit;

one or more vapor flow sensors operatively connected to the vapor carrying conduit between the plurality of fuel dispensing points and the main fuel storage system;

a plurality of liquid dispensing meters each associated with one of the plurality of fuel dispensing points and operatively connected to the fluid carrying conduit between the one of the plurality of fuel dispensing points and the main fuel storage system; and

a central electronic and diagnostic system adapted to:

communicate with the one or more vapor flow sensors and the plurality of liquid dispensing meters;

calculate a plurality of vapor flow to dispensed fuel ratios for each of the plurality of fuel dispensing points;

determine a proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determine an overall proportion of vapor flow to dispensed fuel ratios indicating a failure; and

compare the proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the plurality of dispensing points to the overall proportion of vapor flow to dispensed fuel ratios indicating a failure, thereby determining which of the plurality of fuel dispensing points have experienced true vapor recovery failures.

20. (Cancelled) The system of claim 19 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure.

21. (Cancelled) The system of claim 19 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 1% significance level.

22. (Cancelled) The system of claim 19 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 5% significance level.

23. (Cancelled) A system for detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the system comprising:

a plurality of fuel dispensing points coupled to a main fuel storage system by fluid carrying conduit and vapor carrying conduit;

one or more vapor flow sensors operatively connected to the vapor carrying conduit between the plurality of fuel dispensing points and the main fuel storage system;

a plurality of liquid dispensing meters each associated with one of the plurality of fuel dispensing points and operatively connected to the fluid carrying conduit between the one of the plurality of fuel dispensing points and the main fuel storage system; and

a central electronic and diagnostic system adapted to:

communicate with the one or more vapor flow sensors and the plurality of liquid dispensing meters;

calculate a plurality of vapor flow to dispensed fuel ratios for each of the plurality of fuel dispensing points;

determine an observed number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determine an expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points; and

determine whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on a calculation that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points.

24. (Cancelled) The system of claim 23 wherein the central electronic and diagnostic system determines whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on producing a chi-squared statistic that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points and comparing the chi-squared statistic to a critical value.

25. (Cancelled) The system of claim 23 wherein the central electronic and diagnostic system is further adapted to:

determine an observed number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points; and

determine an expected number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points;

wherein the central electronic and diagnostic system determines whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on a calculation that is a function of the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points and the observed number and the expected number of vapor flow to dispensed fuel ratios indicating a non-failure for each of the fuel dispensing points.

26. (Cancelled) The system of claim 25 wherein the central electronic and diagnostic system determines whether any of the plurality of fuel dispensing points has experienced a true vapor recovery failure based on producing a chi-squared statistic that is a function of the observed numbers and the expected numbers for each of the fuel dispensing points and comparing the chi-squared statistic to a critical value.

27. (Cancelled) The system of claim 23 wherein the central electronic and diagnostic system is further adapted to:

determine a proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the fuel dispensing points;

determine an overall proportion of vapor flow to dispensed fuel ratios indicating a failure; and

compare the proportion of vapor flow to dispensed fuel ratios indicating a failure for each of the plurality of dispensing points to the overall proportion of vapor flow to dispensed fuel ratios indicating a failure, thereby determining which of the plurality of fuel dispensing points have experienced true vapor recovery failures.

28. (Cancelled) The system of claim 27 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure

is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure.

29. (Cancelled) The system of claim 27 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 1% significance level.

30. (Cancelled) The system of claim 27 wherein a true vapor recovery failure is determined if the proportion of vapor flow to dispensed fuel ratios determining a failure is greater than the overall proportion of vapor flow to dispensed fuel ratios indicating a failure by an amount indicating a failed fueling point with at least a 5% significance level.

Please add new claims 31-54, as follows:

31. (New) A method of detecting a true vapor recovery failure in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the method comprising the steps of:

a) calculating a plurality of vapor recovered to fuel dispensed ratios for each of a plurality of fuel dispensing points;

b) determining a first observed number of said ratios indicating a failure for each of said plurality of fuel dispensing points;

c) determining a second observed number of said ratios not indicating a failure for each of said plurality of fuel dispensing points;

d) determining a first expected number of vapor recovered to fuel dispensed ratios indicating a failure for each of said plurality of fuel dispensing points;

e) determining a second expected number of vapor recovered to fuel dispensed ratios not indicating a failure for each of said plurality of fuel dispensing points; and

f) determining whether any of said plurality of fuel dispensing points has experienced a true vapor recovery failure based on a calculation that is a function of (1) said first observed number and said first expected number, and (2) said second observed number and said second expected number.

32. (New) The method of claim 31, wherein said step of determining whether any of said plurality of fuel dispensing points has experienced a true vapor recovery failure comprises:

g) comparing said first observed number to said first expected number and comparing said second observed number to said second expected number to formulate a combined difference; and

h) comparing said combined difference to a threshold value to determine if one or more of said plurality of fuel dispensing points has a failure.

33. (New) The method of claim 32, wherein said combined difference is formulated by calculating a Chi-squared statistic according to the formula $X^2 = \Sigma (Oi - Ei)^2 / Ei$.

34. (New) The method of claim 32, wherein said threshold value is a critical value from a Chi-squared statistical table.

35. (New) A system for detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the system comprising:

a plurality of fuel dispensing points each coupled to a main fuel storage system by a fluid carrying conduit and a vapor carrying conduit;

one or more vapor flow sensors operatively connected to said vapor carrying conduit between the plurality of fuel dispensing points and said main fuel storage system;

a plurality of liquid dispensing meters each associated with one of said plurality of fuel dispensing points, each of said plurality of liquid dispensing meters operatively connected to said fluid carrying conduit between said one of said plurality of fuel dispensing points and the main fuel storage system; and

a central electronic and diagnostic system adapted to:

a) communicate with said one or more vapor flow sensors and said plurality of liquid dispensing meters;

b) calculate a plurality of vapor recovered to fuel dispensed ratios for each of said plurality of fuel dispensing points;

c) determine a first observed number of said ratios indicating a failure for each of said plurality of fuel dispensing points;

d) determine a second observed number of said ratios not indicating a failure for each of said plurality of fuel dispensing points;

e) determine a first expected number of vapor recovered to fuel dispensed ratios indicating a failure for each of said plurality of fuel dispensing points;

f) determine a second expected number of vapor recovered to fuel dispensed ratios not indicating a failure for each of said plurality of fuel dispensing points; and

g) determine whether any of said plurality of fuel dispensing points has experienced a true vapor recovery failure based on a calculation that is a function of (1) said first observed number and said first expected number, and (2) said second observed number and said second expected number.

36. (New) The system of claim 35, wherein said central electronic and diagnostic system:

h) compares said first observed number to said first expected number and compares said second observed number to said second expected number to formulate a combined difference; and

i) compares said combined difference to a threshold value to determine if one or more of said plurality of fuel dispensing points has a failure.

37. (New) The system of claim 36, wherein said combined difference is formulated by calculating a Chi-squared statistic according to the formula $X^2 = \Sigma (Oi - Ei)^2 / Ei$.

38. (New) The system of claim 36, wherein said threshold value is a critical value from a Chi-squared statistical table.

39. (New) A method of detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the method comprising the steps of:

a) calculating a plurality of vapor recovered to fuel dispensed ratios for each of a plurality of fuel dispensing points;

b) determining which of said ratios indicates a failure for each of said plurality of fuel dispensing points;

c) determining a proportion of said ratios indicating a failure for each of said plurality of fuel dispensing points;

d) determining an expected proportion of vapor recovered to fuel dispensed ratios indicating a failure derived from all of said plurality of fuel dispensing points; and

e) comparing said proportion to said expected proportion for each of said plurality of fuel dispensing points; and

f) determining which of said plurality of fuel dispensing points have experienced true vapor recovery failures based on said step of comparing.

40. (New) The method of claim 39 wherein a true vapor recovery failure in said plurality of fuel dispensing points is determined if said proportion is greater than said expected proportion.

41. (New) The method of claim 39 wherein a true vapor recovery failure in said plurality of fuel dispensing points is determined if said proportion is greater than said expected proportion by at least a 1% significance level.

42. (New) The method of claim 39 wherein a true vapor recovery failure in said plurality of fuel dispensing points is determined if said proportion is greater than said expected proportion by at least a 5% significance level.

43. (New) The method of claim 39, further comprising:

g) determining a first observed number of said ratios indicating a failure for each of said plurality of fuel dispensing points;

h) determining a second observed number of said ratios not indicating a failure for each of said plurality of fuel dispensing points;

i) determining a first expected number of vapor recovered to fuel dispensed ratios indicating a failure for each of said plurality of fuel dispensing points; and

j) determining a second expected number of vapor recovered to fuel dispensed ratios not indicating a failure for each of said plurality of fuel dispensing points;

wherein said step (f) determines which of said plurality of fuel dispensing points have experienced true vapor recovery failures based on either said step (e) or a calculation that is a function of (1) said first observed number and said first expected number, and (2) said second observed number and said second expected number.

44. (New) The method of claim 43, wherein said step (f) determines which of said plurality of fuel dispensing points have experienced true vapor recovery failures based on the combination of both said step (e) and said calculation.

45. (New) The method of claim 43, wherein said step determining whether any of said plurality of fuel dispensing points has experienced a true vapor recovery failure comprises:

k) comparing said first observed number to said first expected number and comparing said second observed number to said second expected number to formulate a combined difference; and

l) comparing said combined difference to a threshold value to determine if one or more of said plurality of fuel dispensing points has a failure.

46. (New) The method of claim 45, wherein said combined difference is formulated by calculating a Chi-squared statistic according to the formula $X^2 = \Sigma (Oi - Ei)^2 / Ei$.

47. (New) The method of claim 45, wherein said threshold value is a critical value from a Chi-squared statistical table.

48. (New) A system for detecting true vapor recovery failures in a fuel dispensing system capable of fueling non-ORVR and ORVR equipped vehicles, the system comprising:

a plurality of fuel dispensing points coupled to a main fuel storage system by a fluid carrying conduit and a vapor carrying conduit;

one or more vapor flow sensors operatively connected to said vapor carrying conduit between the plurality of fuel dispensing points and the main fuel storage system;

a plurality of liquid dispensing meters each associated with one of said plurality of fuel dispensing points, each of said plurality of liquid dispensing meters operatively connected to said fluid carrying conduit between said one of said plurality of fuel dispensing points and said main fuel storage system; and

a central electronic and diagnostic system adapted to:

a) communicate with said one or more vapor flow sensors and said plurality of liquid dispensing meters;

b) calculate a plurality of vapor recovered to fuel dispensed ratios for each of said plurality of fuel dispensing points;

c) determine which of said ratios indicates a failure for each of said plurality of fuel dispensing points;

d) determine a proportion of said ratios indicating a failure for each of said plurality of fuel dispensing points;

e) determine an expected proportion of vapor recovered to fuel dispensed ratios indicating a failure derived from all of said plurality of fuel dispensing points; and

f) compare said proportion to said expected proportion for each of said plurality of fuel dispensing points to generate a comparison; and

g) determine which of said plurality of fuel dispensing points have experienced true vapor recovery failures based on said comparison.

49. (New) The system of claim 48 wherein a true vapor recovery failure in said plurality of fuel dispensing points is determined if said proportion is greater than said expected proportion.

50. (New) The system of claim 48 wherein a true vapor recovery failure in said plurality of fuel dispensing points is determined if said proportion is greater than said expected proportion by at least a 1% significance level.

51. (New) The system of claim 48 wherein a true vapor recovery failure in said plurality of fuel dispensing points is determined if said proportion is greater than said expected proportion by at least a 5% significance level.

52. (New) The system of claim 48 wherein said central electronic and diagnostic system is further adapted to:

h) determine a first observed number of said ratios indicating a failure for each of said plurality of fuel dispensing points;

i) determining a second observed number of said ratios not indicating a failure for each of said plurality of fuel dispensing points;

j) determine a first expected number of vapor recovered to fuel dispensed ratios indicating a failure for each of said plurality of fuel dispensing points; and

k) determine a second expected number of vapor recovered to fuel dispensed ratios not indicating a failure for each of said plurality of fuel dispensing points;

wherein said function (g) is based on either function (f) or a calculation that is a function of (1) said first observed number and said first expected number, and (2) said second observed number and said second expected number.

53. (New) The system of claim 52, wherein said central electronic and diagnostic system designates a true vapor recovery failure in said plurality of fuel dispensing points based on the combination both said function (g) and on said calculation.

54. (New) The system of claim 52, wherein said central electronic and diagnostic system:

(l) compares said first observed number to said first expected number and compares said second observed number to said second expected number to formulate a combined difference; and

(m) compares said combined difference to a threshold value to determine if one or more of said plurality of fuel dispensing points has a failure.

55. (New) The system of claim 54, wherein said combined difference is formulated by calculating a Chi-squared statistic according to the formula $X^2 = \Sigma (Oi - Ei)^2 / Ei$.

56. (New) The system of claim 54, wherein said threshold value is a critical value from a Chi-squared statistical table.